Idaho Currents

New LEDs Trim Trees, Reduce Energy Bills

This year the state of Idaho is saving energy by using new LED (light-emitting diode) Christmas lights on its official state Christmas tree on the steps of the statehouse.

The tree, a 40-foot Blue Spruce donated by a Boise couple, is adorned by 10,000 new energy-saving LED lights that were bought from Kellogg Plastics Ltd. Inc, a small company based in the northern Idaho city of Smelterville.

Arrangements for the purchase of the new lights were made by the Idaho Energy Division in an effort to encourage energy conservation throughout the state. The LEDs require only 1/100th of the energy compared to incandescent lights, and thus will cost the state just 1/100th of what it normally would cost to illuminate the tree throughout the season.

Unlike incandescent light, which is filtered through colored glass to create specific colors, solid-state lighting is produced in an array of colors, which makes it ideal for the multi-colored strands that decorate trees, mantel pieces and household eaves during the holiday season.

Because only one color of light is produced by the LED, there's little to no extra energy heating up the bulb. Traditional bulbs are known to get hot and incite fears of fire when hung on indoor trees, while LEDs barely even get warm. From twinkle lights to globe lights, icicle lights to beaded strands, LEDs are beginning to compete with incandescent bulbs in most applications.

For much the same reason, LEDs last much longer than incandescent bulbs. The lights require virtually no maintenance and the bulbs are not removable. As a result, they can be sealed into durable plastic, which protects them from the moisture damage and breakage that hamper incandescent lights.

In addition to being more cost-efficient, the LEDs will also last longer. They have a bulb-life of 200,000 hours, which means it will be 20 years before the state has to purchase new lights.

On The Cover

As the sun rises behind Idaho's Capitol, the new LED lights illuminate the official 2005 Christmas tree. Photos on page 1 and 2 by Diane Holt, IDWR Graphic Specialist.

A report commissioned by the U.S. Department of Energy estimated that in 2002, holiday lighting accounted for 2.2 billion kilowatt-hours (kWh) of electricity use, according to the Northwest Energy Efficiency Alliance (NEEA).

Because LEDs boast energy-efficiency advantages of 80 percent to 90 percent over traditional incandescent holiday lights, the report estimates a complete market shift to LEDs could reduce electricity demand by 2 billion kWh each year. The potential energy savings from LED holiday lighting is significant enough to make consumers, communities and utilities begin to take notice.

The biggest barrier to widespread adoption of LEDs has been cost, says NEEA. Prices dropped significantly in 2004 and 2005, but LEDs still hover at about $30 for a 100-light strand, compared to $4 to $10 for incandescent lights.

But if you consider your holiday electric bill, and the fact that a $10 strand of lights may only last a year or two, buying the more expensive LED strand could be well worth the money. It's also a great way to save energy and help the environment.

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Boise State Receives Federal Grant for Wind Energy Research

Boise State University is the recipient of a $500,000 appropriation from the U.S. Department of Energy to fund wind energy research in Idaho.

The funds, earmarked as part of the 2006 Energy and Water Development Appropriations Act, will enable the university to develop new technologies aimed at reducing the costs of producing electricity on wind farms and at distributed locations, said John Gardner, chair of the Department of Mechanical Engineering in the College of Engineering at Boise State.

"The goal is to develop new technologies to reduce our dependence on fossil fuel while also contributing to the development of a local wind energy economic cluster," said Gardner, who will head the new program.

Idaho Sen. Larry Craig was instrumental in securing the federal funding. "We appreciate the senator's leadership as well as the support of the rest of our congressional delegation for this important research," Gardner said. "By developing sustainable, distributed energy sources, we can reduce greenhouse gases, improve local economies and even increase energy independence."

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>
> ***John Gardner, College of Engineering, Boise State University***

Craig said he was excited about the many opportunities provided to the nation and Idaho by this legislation. "The benefits include increased energy independence and homeland security, economic development, and cutting edge research and education in southwest Idaho," Craig said.

Boise State will partner with the National Renewable Energy Laboratory, the Idaho National Laboratory, the Idaho Department of Water Resources (Energy Division), and other public and private agencies on the Wind Energy Research Laboratory, Gardner said. The initial $500,000 appropriation will be used to fund post-doctoral research positions and provide fellowships for graduate students.

Southwest Idaho's wind resources are consistent with the strategic research goals set by the DOE, Gardner added. The focal point of the laboratory will be the research and development of wind turbines that would harness the area's low-velocity winds for distributed power systems.

"There is very little research being conducted anywhere that focuses on wind energy technologies for areas that have lower-velocity winds," Gardner said. "There is a great deal of potential here to develop a research facility with unique capabilities in Southwest Idaho that will support economic growth in this area."

Boise State researchers have laid the groundwork for the new wind energy program through research projects, consultations and partnerships with wind energy businesses over the past few years, Gardner said. The new laboratory will provide opportunities for continued collaborations, he said, and will benefit Boise State engineering students who will have the opportunity to conduct hands-on research.

Todd Haynes, a Boise State graduate student in mechanical engineering, said he is looking forward to conducting research as part of the new laboratory. "We have been conducting wind energy research at Boise State for several years, and I am excited about the expanded opportunities provided by this additional funding," Haynes said.

High Heat Bills?

It Could Be Your Ducts!

A duct system that is well designed and properly sealed can make your home more comfortable, more energy efficient, and safer. Why are duct improvements in your home a wise investment?

Comfort – Sealing and insulating ducts can help with common comfort problems, such as rooms that are too hot in the summer or too cold in the winter.

Health – Sealing ducts can help improve indoor air quality by reducing the risks of pollutants entering ducts and circulating through your home. Fumes from household and garden chemicals, insulation particles, and dust can enter your duct system through leaks and can aggravate existing asthma and allergy problems.

In addition, pressure from leaky supply ducts in your crawl space can force dust, insulation and other particles into the heating area.

Safety – During normal operation, gas appliances such as water heaters, clothes dryers and furnaces release combustion gases like carbon monoxide through their exhaust systems. Leaking ductwork or imbalances in your heating and cooling system may cause "backdrafting," where these gases are drawn into the living space, rather than expelled to the outdoors. Sealing leaks can minimize this risk.

Save Money – Leaky ducts can reduce heating and cooling system efficiency by as much as 20 percent. Duct sealing and insulating increases efficiency, lowers your energy bills, and can often pay for itself in energy savings.

Plus, if you're planning to install new heating and cooling equipment, a well designed and sealed duct system may allow you to downsize to a smaller, less costly heating and cooling system.

Protect the Environment – Energy generation is one of the largest contributors to greenhouse gases. By sealing your ducts and reducing the amount of energy necessary to comfortably heat or cool your home, you can reduce the amount of air pollution generated.

Rely On Professionals To Repair, Maintain Your Heat Ducts

If you suspect your home has poorly performing ducts, the Energy Division recommends using a professional contractor for duct improvements.

A professional contractor, including Home Performance Specialists certified by the Energy Division, will:

- Inspect the whole duct system, including attic and crawl spaces, and measure airflow and duct leakage with diagnostic equipment.
- Evaluate how well the system's supply air and return are is balanced for better airflow. Many systems have air return ducts that are too small. The contractor can re-evaluate airflow after repairs are completed.
- Seal all leaks and connections with mastic or an aerosol-based sealant. *Duct tape should never be used because it will not last.*
- Seal all registers and grills tightly to the ducts.
- Insulate ducts in unconditioned areas, like attics and crawl spaces, with duct insulation that carries an R value of 8 or higher.
- Repair damaged and disconnected ducts and straighten out flexible ducts that are tangled or crushed.
- Include a new filter as part of any duct system improvements.

To make sure there is no backdrafting of gas or oil-burning appliances, the contractor conducts a combustion safety test after the ducts are sealed. Appliance vent backdrafting occurs when there is insufficient air for the combustion process. Based on these backdrafting tests, the contractor may recommend safety measures such as:

- Pressure relief from bedrooms to the main living area.
- Sealed combustion appliances
- Air supplies from high volume kitchen exhaust fans.

For a list of Home Performance Specialists, call the Idaho Energy Hotline, **1-800-334-SAVE**, or see www.idahoenergystar.com.